diaphragm 14. Thus, the aperture A'1 is opened.

The projected light beam from the light source 5 passes through only the region A1. The aperture diaphragm 14 is at a position conjugate to the pupil 18, and the projected light beam passes through a region, which corresponds to the region A1 in the pupil 18. The reflected light beam reflected by the fundus of the eye 1 under testing passes through the region of A'1, which is symmetrical to the region A1 of the aperture diaphragm 14 and reaches the polarization beam splitter 8. Then, the reflected light beam passes through the polarization beam splitter 8. As described above, only the P linearly polarized light passes through the polarization beam splitter 8, and the scattering light included in the reflection light beam is almost completely removed. The reflected projection light beam passing through only the region A1 of the pupil 18 is reflected by the fundus of the eye 1 under testing. The reflected reflection light beam passes through the region A'1 and is projected on the photoelectric detector 21 by the focusing lens 19 and the image forming lens 20, and a secondary index image is formed.

(Step03) Under this condition, the position as set in Step 1 is used as the center, and the focusing lens 19 is moved before and after the center by a predetermined amount of step. In association with the movement of the focusing lens 19, the light source 5 and the projection lens 6 are integrally moved. While changing the focusing condition on the photoelectric detector 21, an image signal obtained at the photoelectric detector 21 is stored in the storage unit

27 (e.g. frame memory) at each step. The image signals to be stored are, for instance, the signals for 30 frames including the target position (target focusing position).

(Step04) The control unit 28 compares a large number of image data stored at the storage unit 27. If the eye under testing has astigmatism, there are two focusing positions at a front side focal line position and at a rear side focal line position of the eye under testing. Thus, the data of focusing conditions such as positions of the focusing lens 19 at the focusing at the front side focal line position and the rear side focal line position are acquired.

(Step05) The control unit 28 selects two image data, i.e. the data at the front side focal line position and the rear side focal line position of the eye under testing. In this case, at the front side focal line position and the rear side focal line position, the index image is focused only in the predetermined direction and these are formed as slit-like images different from each other in the direction. As a result, the two image data at the front side focal line position and the rear side focal line position are judged and selected according to whether the form of the index image is in a slit-like shape or not.

(Step06) Based on the two image data at the front side focal line position and the rear side focal line position selected in Step 5, the light amount intensity distribution at each position is calculated at the control unit 28. Further, from the light amount intensity distribution at each position, the 2-dimensional light amount intensity

distribution (PSF: spread function) is calculated.

Now, brief description will be given on the 2-dimensional light amount intensity distribution referring to Fig. 5.

The light amount intensity distribution at the rear side focal line is shown in Fig. 5 (A), and the light amount intensity distribution at the front side focal line position is given in Fig. 5 (B).

In the light amount intensity distribution at the rear side focal line as shown in Fig. 5 (A), Px, i.e. a cross-section in X direction, shows the light amount distribution in a direction where the light beam is most converged on rear side focal line.

Similarly, in the light amount intensity distribution of the front side focal line as shown in Fig. 5 (B), Py, i.e. a cross-section in Y direction, shows the light amount distribution in a direction where the light beam is most converged on the front side focal line.

The 2-dimensional light amount intensity distribution (PSF: spread function) can be given as shown Fig. 6 (A) and Fig. 6 (B) by elliptical approximation at a light amount intensity I (i). For instance, in Fig. 6 (B), the 2-dimensional light amount intensity distribution is calculated as Pxy.

(Step07) Information data S, C, and Ax (a spherical degree, an astigmatic degree, and an astigmatic axis) of the eye under testing in the region A1 are acquired by calculation based on the positional data of the focusing lens 19, the directions of the slit images at the front side